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A NEW MEIOCARDIA (PELECYPODA, GLOSSIDAE) FROM THE EOCENE OF FLORIDA

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The Crystal River Formation (Ocala Group) of Late Eocene age is well exposed in limestone quarries to the northwest, west, south, and southeast of Gainesville, Florida. Although most of the mollusks are represented by poorly preserved casts and molds, the fauna is exceedingly diverse. Besides the many different kinds of marine mollusks, there is also a great diversity of Foraminifera, Bryozoa, Crustacea, and Echinoidea. However, both colonial and solitary corals are rare and represented by few species. Probably because of the relatively poor preservation of most of the mollusks, this part of the invertebrate fauna is still largely undescribed. However, Dr. Katherine V. W. Palmer of the Paleontological Research Institution has nearly completed a monograph of the entire molluscan fauna of the Ocala Group.

The Crystal River Formation is a pure limestone that consists of nearly 100 per cent, calcium carbonate, and in most places more than 50 per cent of the rock is composed of the calcareous shells or skeletons of marine invertebrates. In some places the limestone has been replaced by chert, and at a few localities some of the fossils have been silicified.

An undescribed species of *Meiocardia* is an uncommon fossil in the *Lepidocyclina-Pseudophragmina* faunizone (Puri, 1957, p. 48) of the Crystal River Formation. Some other associated invertebrates in this faunizone are *Crassatella* sp., *Glycymeris* sp., *Cardium* sp., *Plicatula* sp., *Tapes* sp., *Clavagella (Clavagella)* sp., *Clavagella (Stirpulina)* sp., several species of gastropods, many miliolids and other Foraminifera, small echinoids, and fragments of bryozoans and crustaceans. As far as I am aware, this is the first report of clavagellids occurring in Cenozoic strata in the western hemisphere, and both *Clavagella (Clavagella)* sp. and *Clavagella (Stirpulina)* sp. are much like species described from the Paris Basin

Eocene. When the mollusks are better known, some of them can be used as zone fossils, and they have the added advantage of being identified by the stratigrapher and field geologist with greater ease than the bryozoans, Foraminifera, and ostracods.

This species of *Meiocardia* is only the second reported from Eocene strata along the Atlantic and Gulf Coasts (Palmer and Brann, 1965, p. 192). *Meiocardia carolinae* Harris, 1919, (Harris is Van Winkle and Harris) has been found in Middle and Upper Eocene strata in North and South Carolina.

The present distribution of *Meiocardia* is interesting because it is disjunct, a rare phenomenon amongst pelecypod genera and families. There is one species, *Meiocardia agassizi Dall,* living in a small area in the southeastern Caribbean Sea—Trinidad, Barbados, and off the north coast of Venezuela. This region has not been thoroughly collected in the deeper waters, and so the exact geographic range of this species is not known, but it appears to be uncommon and confined to this restricted area. The remaining living representatives of the genus are found in Hawaii westward to southern Japan, the Philippines, the East Indies, Queensland, and westward at least as far as the Persian Gulf. Although *Meiocardia* is not confined to the Indo-Pacific today, its main development is in this region. Several other genera of mollusks found in Ocala strata are now either confined to the Indo-Pacific region or nearly so. One of the puzzling questions is why so many of these present-day Indo-Pacific genera disappeared from the Atlantic and Gulf Coastal regions during Middle and Late Eocene times.

Family Glossidae

Meiocardia H. and A. Adams, 1857

Type species: subsequent designation, von Martens, 1870, *Chama moltkiana* Spengler, 1783.

MEIOCARDIA PALMERAE Nicol, new species. Figs. 1-5.

Description: Shell small; holotype 12.1 mm. high, 11.8 mm. long; largest specimen 25.7 mm. high, 26.8 mm. long; smallest specimen 11.8 mm. high, 10.2 mm. long; average for 10 specimens is 15.2 mm. high, 14.2 mm. long; ratio of length to height for the 10 specimens 0.93; most specimens are higher than long but two are longer than high; valve outline subtrapezoidal, anterior side arcuate, ventral margin gently rounded and sloping post-

eriorly, posterior side subtruncate, dorsal margin posterior to the beaks gently rounded, dorsal margin anterior to the beaks rounded; anterior adductor muscle scar large and nearly round, located at the antero-dorsal margin; pallial line not visible; poserior adductor muscle scar larger than anterior, indistinct, located midway on the posterior border of the valve; 7 of the casts smooth or nearly so; 3 casts have concentric rounded ribs well marked, as many as 7 concentric ribs easily seen, ribs not seen on anterior margin nor posterior to a prominent keel which runs from the posterior side of the beak to the postero-ventral margin in a broad arc; a second and shorter keel seen in a few specimens which runs from under the beak along the posterior part of the dorsal margin; interior margins of the valves apparently smooth; beaks high, well enrolled, strongly prosogyrate, located at the anterior 1/4 of the dorsal margin; only portions of the hinge teeth seen on some of the specimens; they appear to be typical for the genus *Meiocardia.*

Comparison: Meiocardia palmerae is clearly distinct from *M. carolinae* Harris, 1919, by being proportionately higher, by having higher beaks, by having a larger posterior keel or ridge, and by being smaller than *M. carolinae.*

Meiocardia palmerae is named in honor of Dr. Katherine V. W. Palmer, Director of the Paleontological Research Institution at Ithaca, New York. Dr. Palmer is particularly noted for her research on Eocene mollusks of the Gulf and Atlantic Coasts.

Localities: Locality #1. The type locality for *Meiocardia palmerae* is just east of old U. S. Highway 441 at Zuber, Marion County, Florida. This is Puri's (1957, p. 70) PM-2, and in the same publication Puri designated this place as the cotype locality for the Ocala Group. This is also Puri and Vernon's (1964, p. 81) Stop 11; SE1/4 SW1/4 Sec. 11, T. 14 S., R. 21 E. Besides the holotype, 4 of the paratypes were collected at this locality.

Locality #2. One paratype was collected by G. H. Espenshade of the U. S. Geological Survey in 1955 at U. S. G. S. locality #20154 (106). This is an abandoned phosphate mine with solution-pitted limestone well exposed; "French Phosphate Mines," 1 1/2 miles northeast of Anthony, Marion County, Florida; Sec. 3, T. 14 S., R. 22 E.

Locality #3. One paratype was collected at an abandoned lime-

stone quarry one mile west of Interstate 75 and two miles south of State Highway 26, Alachua County, Florida; SE1/4 Sec 9, T. 10 S., R. 18 E.

Locality #4. Two paratypes were collected at the Haile Quarries, Newberry Corporation pits, five miles northeast of Newberry, Alachua County, Florida on State Highway 235; SW1/4 SE1/4 Sec. 13, T. 9 S., R. 17 E. This is Puri and Vernon's (1964, p. 82) Stop 12.

Locality #5 The largest specimen is a paratype collected approximately two miles northeast of High Springs, Alachua County, Florida; N1/2 Sec 30, T. 7 S., R. 18 E.

Type specimens and repositories: The holotype and 4 paratypes are deposited in the collection at the Paleontological Research Institution—P.R.I.

Holotype P.R.I. 27543, right valve, figured, locality #1.
Paratype P.R.I. 27544, right valve, figured, locality #1.
Paratype P.R.I. 27545, left valve, locality #1.
Paratype P.R.I. 27546, left valve, locality #4.
Paratype P.R.I. 27547, right valve, locality #3.

Five of the paratypes are deposited in the collection at the U. S. National Museum—U.S.N.M.

Paratype U.S.N.M. 645660, right valve, figured, locality #5.
Paratype U.S.N.M. 645656, left valve, locality #1.
Paratype U.S.N.M. 645657, right valve, locality #1.
Paratype U.S.N.M. 645658, left valve, locality #2.
Paratype U.S.N.M. 645659, right valve, locality #4.

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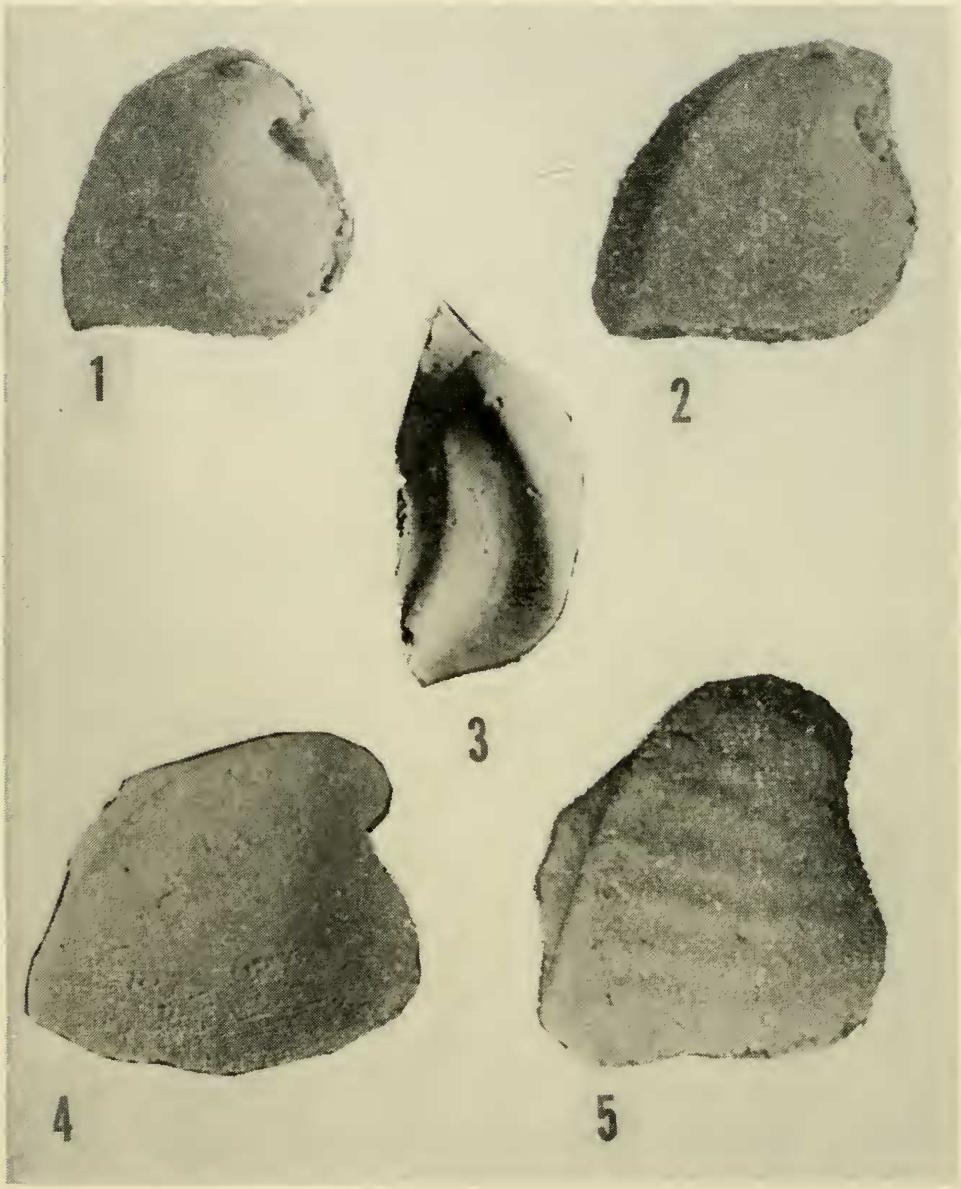

Figs. 1, 2. Holotype P.R.I. 27543. Right Valve, exterior; 1. showing beak, 2. showing posterior keel. Specimen 12.1 mm. high. Figs. 3,4. Paratype U.S.N.M. 645660. Right valve; 3. posterior dorsal view showing both keels, 4. exterior. Specimen 25.7 mm. high. Fig. 5. Paratype P.R.I. 27544. Right valve, exterior showing concentric ribs. Specimen 17.0 mm. high.

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